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The Current Capacity and Future Development of Economic Evaluation for Policy Decision-Making: A Survey among Researchers and Decision-Makers in Thailand

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ABSTRACT

Objective: This study aims to explore the knowledge, experience, and attitudes toward economic evaluation (EE) among decision-makers and researchers in Thailand.

Methods: Researchers were purposively selected from Thai academics and both public and private research organizations related to EE. Decision-makers at the provincial level were purposively selected from the members of the Management Committees of Provincial Health Offices, and those at hospital level were randomly selected from members of the public and private hospital formulary drug committees throughout Thailand. The self-administered postal questionnaires were distributed. Univariate and bivariate analyses were applied.

Results: Of the total 2575 questionnaires distributed, 758 (29.4% response rate) were completed and sent back. The majority of researchers and decision-makers were not familiar with technical terms commonly used in health EE, e.g., incremental cost-effectiveness ratio, discounting, and sensitivity analysis. More decision-makers (70.6%) had never had EE training compared to researchers (50.0%). Both roles indicated that value for money was one of the important issues to consider for health technology adoption.

Conclusions: An extensive unmet demand for EE training among Thai researchers and decision-makers still exists. Findings from this study contribute to the short- and long-term plans for research capacity building.

Keywords: capacity, economic evaluation, pharmacoeconomics, survey, Thailand.

Introduction

Because of the growing health needs of an aging population and the advancement in health technology, especially pharmaceuticals, health-care costs have been rapidly increasing in the Thai health-care system. Rising health expenditure has caused concerns among policymakers and practitioners to make the most efficient use of scarce health-care resources. As a consequence, economic evaluation (EE) or pharmacoeconomic assessment defined as a "policy research" that identifies, measures, and compares the costs and consequences of medical technology [1] was introduced to guide health-care resource allocation decisions [2,3]. Recently, the first national guidelines for conducting EE were endorsed in March 2008 by the subcommittee for the development of the National List of Essential Drugs (NLED), which is the only pharmaceutical reimbursement list in Thailand, and referred to by all major public health planners. In addition, the revision of the 2008 NLED included pharmacoeconomic evidence which was officially incorporated in the drug selection process for the first time in Thai history [4].

Because EE is a relatively new discipline in Thailand, there was wider concern over the feasibility of using EE for decision-making, especially at the local or hospital level [5]. Teerawattananon et al. extensively documented the potential and barriers of using EE for informing health-care coverage decisions at the national level; however, there was no study examining these challenges at the subnational level [6]. Ross proposed that the use of EE by decision-makers is influenced by three main factors [7]. The first is that the users have knowledge of the method, the second is whether they perceive any overall benefit in using it, and the third is if they perceive the relative importance of marginal efficiency compared with other objectives as a factor influencing resource allocation decisions in their particular health-care system. In addition, it is also recognized that the potential constraints to the use of EE come from not only about the lack of understanding and support among the potential users but also the barriers related to the production of EE information. Expanding local research capacity is essential because decision-makers prefer to use locally relevant information over international data.

This present study aims to explore decision-makers' knowledge, experience, and attitudes toward the use of EE at the subnational level as well as to assess the current human capacity and gaps in EE among those decision-makers and Thai scholars. This study focused on two groups of decision-makers. The first are the members of the Management Committee (MC) of each Provincial Health Office (PHO), who are responsible for capital investment at health centers, community hospitals, and provincial hospitals, supporting vertical public health programs and human resource development at the provincial level. The MC normally consists of heads and deputies of PHO, heads of PHO's departments, heads of District Health Offices, and directors of community and provincial hospitals. The second are the members of the Hospital Drug Formulary Committees (HDFCs), who are responsible for the selection of drugs purchased and used in each hospital. The HDFC includes heads of hospital pharmacies and representatives from each group of physicians, e.g., surgeons, pediatricians, internists, obstetricians, and

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ophthalmologists. Lastly, scholars included university lecturers and researchers at both public and private institutes who search for or provide EE evidence and educate the public.

Because there is an increasing interest to use economic evidence for resource allocation, a better understanding of the decision-makers' and scholars' knowledge, attitude, and value toward the use of EE will provide useful evidence that can be employed for the development of human resources and relevant health system infrastructure in both short- and long-term periods. Lessons learned from this study can also be useful not only for the Thai health-care system but also in other developing settings where a health economic discipline has not been well established.

Methods

Survey Sample

Data were collected through a questionnaire survey conducted by the authors between April and December 2007. The samples consisted of members of the MC of all 75 PHOs and members of the HDFC of 100 hospitals that were randomly selected from a total of 1044 community, provincial, and regional hospitals throughout Thailand. To our knowledge, the actual number of researchers who had an expertise of health economics was unknown. Nevertheless, the sample frame for researchers included all potential contributors (i.e., faculty members and researchers in both public and private organizations). Both research-only staffs as well as lecturers who were expected to have EE expertise from 29 academic institutions, particularly in the Department of Community and Family Medicine at the Faculty of Medicine, Department of Social and Administrative Pharmacy at the Faculty of Pharmacy, the Faculty of Public Health, and the Faculty of Economics throughout Thailand, were purposively selected. Moreover, the researchers from 16 relevant research units in the government sector as well as pharmaceutical companies were included because until now no private EE consulting company has established in Thailand yet. Because the survey mainly focused on the knowledge, experience, and attitudes of Thai researchers and decision-makers with regard to EE, the survey sample excluded academics and consultants working in countries other than Thailand. They did, however, have the potential to produce EE information related to Thai context. Table 1 shows the number of questionnaires sent by type of organizations. For Table 1, see The Current Capacity and Future Development of Economic Evaluation for Policy Decision Making: A Survey among Researchers and Decision Makers in Thailand *Value in Health* Supplementary Information, Part I at: http://www.ispor.org/Publications/value/ViHsupplementary/ViH12s3_Chaikledkaew.asp.

Questionnaire Design

Self-administered postal questionnaires were sent to the aforementioned samples. The questionnaire consisted of four parts. The first part focused on the sociodemographic characteristics of survey respondents and their current organizational roles. The second part contained eight questions relating to respondents' knowledge and experience of EE and their attitudes toward the use of EE in making health resource allocation decisions. For example, how important is the criteria of "value for money" when making decisions concerning health-care resource allocation, or how useful is EE information when developing national drug formulary? The third part concentrated on the potential barriers in conducting EE studies or applying EE into practice or policy decision. The respondents were requested to rate on the prespecified attributes of the criteria for resource allocation the usefulness of EE information and potential barriers. In addition, given the information on the list of diseases without stating the rank of disease burden in terms of Disability Adjusted Life Years (DALYs) loss among the Thai population, the last part was to request the respondents to prioritize the top five health problems where EE could play a significant role in identifying interventions to mitigate their impact. After the respondents prioritized the top five diseases and interventions based on the list of disease burden in Thailand and interventions, a scale from 1 to 5 where 5 corresponded to "the first rank" and 1 to "the fifth rank" was assigned to calculate the mean score.

Because of the variations in the number of members in the MC and the HDFC, the number of postal questionnaires was based on hospital types, e.g., community or private (5 copies), regional (10 copies), and specialist or general (20 copies). With respect to researchers, the postal questionnaires were personally addressed to each potential researcher and sent to each of the 29 academic institutions and 16 public and private sector research units. The questionnaire was prestamped and the return address was printed on the back of the envelope to facilitate the return of the completed questionnaire. A total of 2575 questionnaires with a letter explaining the purpose of the study were mailed in April 2007. Approximately 1 month after mailing, telephone calls were made to questionnaire respondents to verify whether they had received the questionnaires and to stimulate nonrespondents.

Data Analysis

Data were analyzed comparing knowledge, experience, attitudes, and the value of using EE to inform the decision-making process of the two groups of respondents, i.e., decision-makers at the subnational level and researchers. Univariate and bivariate statistical analyses were applied. The statistical differences of findings between the two groups were detected using a *t* test or a chi-square test where appropriate.

Results

Response Rate and Demographic Characteristics of Respondents

Of the total 2575 questionnaires distributed, 758 (29.4% response rate) were completed and sent back. Table 1 shows the response rate by type of respondents. The highest response rate was obtained from researchers in the public sector followed by researchers from the private sector and hospital formulary committee members. It was noted that faculty members at the academic institutions provided the lowest response rate. Researchers had a higher proportion of completing master (68% vs. 34%) and doctoral degrees (23% vs. 5%) compared to decision-makers. For Table 1, see The Current Capacity and Future Development of Economic Evaluation for Policy Decision Making: A Survey among Researchers and Decision Makers in Thailand *Value in Health* Supplementary Information, Part I at: http://www.ispor.org/Publications/value/ViHsupplementary/ViH12s3_Chaikledkaew.asp.

Knowledge, Experience and Training Needs Related to EE

The survey showed limited knowledge and experience in the production and use of EE information among respondents. Figure 1 illustrates that the majority of researchers and decision-makers were not familiar with technical terms commonly used in health EE, e.g., incremental cost-effectiveness ratio (ICER), dis-

counting, and sensitivity analysis. Nevertheless, they were more familiar with the general terms used in costing studies (i.e., unit cost, direct and indirect costs). This may be partly explained by the fact that 50% of researchers and 71% of decision-makers had not been trained in EE. For those trained in EE, short-course training and taught courses in master's or doctoral studies were among the major sources of services provided for both groups. In addition, it was found that 20% of researchers and only 7% of decision-makers had ever been involved in conducting EE studies, and only a few of them (10% for researchers and 4% for decision-makers) have previously published EE papers in domestic or international academic journals. Table 2 demonstrates the need of EE training by type of respondents. More than 80% of both researchers and decision-makers showed their interests in short-course training and on-the-job training, respectively. Decision-makers were significantly more interested in short-course EE training and master's study, whereas researchers preferred to take part in long-term research fellowship programs related to EE in health care. For Figure 1 and Table 2, see The Current Capacity and Future Development of Economic Evaluation for Policy Decision Making: A Survey among Researchers and Decision Makers in Thailand *Value in Health* Supplementary Information, Part II at: http://www.ispor.org/Publications/value/ViHsupplementary/ViH12s3_Chaikledkaew.asp.

Relative Importance and Usefulness of EE Information in Policy Decision-Making

Both researchers and decision-makers similarly indicated that safety, efficacy/effectiveness, quality of life, value for money, and disease severity were more important issues to be considered when they needed to make policy decisions regarding the introduction of new health technology compared with political pressure, the availability of alternatives, and the price of technology (Fig. 2). Furthermore, the majority of researchers and decision-makers shared a common agreement that EE information was useful for the development of national drug formulary, followed by the development of hospital drug formulary, clinical practice guidelines, and communicating with prescribers (Fig. 3). For Figures 2 and 3, see The Current Capacity and Future Development of Economic Evaluation for Policy Decision Making: A Survey among Researchers and Decision Makers in Thailand *Value in Health* Supplementary Information, Part II at: http://www.ispor.org/Publications/value/ViHsupplementary/ViH12s3_Chaikledkaew.asp.

Barriers for the Production and Use of EE in Policy and Practice in Thailand

Researchers indicated that the main barriers related to the production of economic evidence for assisting policy decisions in Thailand included a lack of EE methodological skills among researchers, inadequate human resources, lack of local information regarding the costs and effectiveness of interventions, no clear government policy regarding the use of EE in policy decisions, inadequate financial support from grantors, lack of time, and lack of support from their own organizations (Fig. 4). Regarding the use of EE in policy decisions, decision-makers revealed that the main obstacles were the lack of an explicit ceiling threshold that the society is willing to pay for a quality adjusted life year (QALY) or DALY gained followed by the lack of EE studies/information on particular topics that are of interest to decision-makers, awareness of a potential bias of the study because of industry sponsorship, a lack of confidence in interpreting and using EE results, no clear government policy on the use of EE, disagreement with efficiency criteria for health-care resource allocation, and political barriers (Fig. 5). For Figures 4 and 5, see The Current Capacity and Future Development of Economic Evaluation for Policy Decision Making: A Survey among Researchers and Decision Makers in Thailand *Value in Health* Supplementary Information, Part IV at: http://www.ispor.org/Publications/value/ViHsupplementary/ViH12s3_Chaikledkaew.asp.

Prioritization of Diseases and Interventions for Conducting EE in Thailand

Regarding the ranking scores of diseases and interventions, the respondents were given the list of diseases without being presented the rank of disease burden in terms of DALY loss among the Thai population. They were given this before they were asked to prioritize the top five diseases and interventions where EE should be used to produce cost-effectiveness information. Table 3 shows the list of 14 leading causes of diseases burden and the ranks of topics for economic assessment assigned by researchers and decision-makers in Thailand. It can be seen that both groups of respondents commonly agree that EE studies should focus on HIV/AIDS, traffic accident, diabetes, and homicide. These were also the top four health problems in terms of DALY loss in Thailand. Apart from that, there was no common agreement on the topics for economic assessment between disease burden and respondents' perception. For Table 3, see The Current Capacity and Future Development of Economic Evaluation for Policy Decision Making: A Survey among Researchers and Decision Makers in Thailand *Value in Health* Supplementary Information, Part V at: http://www.ispor.org/Publications/value/ViHsupplementary/ViH12s3_Chaikledkaew.asp.

Moreover, regarding the type of interventions for performing EE, both researchers and decision-makers similarly prioritized that the first, third, and fifth ranks were prevention, screening for secondary prevention, and curative by surgery, respectively. Nevertheless, at the second rank, decision-makers considered social/community intervention, whereas researchers selected screening for secondary prevention, which decision-makers ranked fourth (Table 3). More than 50% of researchers (58.6%) and decision-makers (51.8%) revealed that they ranked in this fashion because those diseases were a health-care burden in Thailand. Furthermore, they had personal interests in those diseases and interventions and noticed that the cost-ineffective interventions in those diseases or interventions tended to be overused, whereas the cost-effective interventions seemed to be underused.

Discussion

This present study is the first to investigate the capacity, attitude, and perception of both researchers and decision-makers concerning the use of EE for policy decision-making as well as the prioritization criteria used for selecting topics for economic assessment in developing settings. Nevertheless, the survey results may not represent what all decision-makers and researchers in Thailand thought about EE because of a relatively low response rate that would be expected from this type of survey. Given that the actual number of respondents who had an expertise of EE in each setting was unknown, the number of questionnaires sent to individuals within the sample frame was assumed and seemingly estimated higher than the actual number of respondents to cover all research staffs and decision-makers at the selected departments and organizations. Consequently, the response rate calculated by the proportion of the number of returned questionnaires and the number of sent questionnaires is likely to be underestimated. In addition, it is possible that

decision-makers and researchers who lack EE knowledge and who are interested in EE training responded to the survey, unlike those who are familiar with EE knowledge. Although the respondents may not be representative of the sample frame, the number of respondents who returned the questionnaires seemed adequate to make sensible policy recommendations for improving the use of EE in decision-making in Thailand.

Based on the survey results, both researchers and decision-makers had very positive attitudes toward the use of EE. In addition to safety, efficacy/effectiveness, and quality of life, cost-effectiveness information resulting from EE was considered as one of the important criteria for making decisions concerning health technology adoption in Thailand and was deemed useful for the development of the national drug formulary. Although both groups of respondents recognized the usefulness of EE, only one-third had ever used EE information in their current work. These findings were similar to the results obtained from the European Network on Methodology and Application of Economic Evaluation Techniques's study, which demonstrated that although two-thirds of decision-makers from nine European countries (i.e., Finland, France, Germany, Norway, Portugal, Spain, Sweden, The Netherlands, and the UK) appreciated the usefulness of EE information, only a third of them had ever really used it in real practice [8]. These results also concurred with the previous studies in the UK [9–11]. It was concluded that an increase in the use of EE was because of the reforms of the National Health Service in the UK. Nevertheless, decision-makers still needed help in interpreting the methodology and results of EE as well as in increasing their knowledge and understanding of EE.

Moreover, this study revealed a number of potential barriers to the production of EE from a researchers' viewpoint as well as the potential barriers related to the use of EE by decision-makers. These barriers related to the production of EE information include a lack of knowledge and skills, an inadequate number of research staff, a lack of local information, and a lack of incentives and support for conducting EE studies. Decision-makers revealed that a lack of EE information, the potential bias of EE studies because of industry sponsorship, and a lack of knowledge and skills to interpret EE information were among the major resistance factors concerning the use of EE in policy decision-making. Similarly, Drummond et al. suggested that the major obstacles for decision-makers were the concerns over the validity of economic studies, leading to a lack of confidence in applying it into policy and to the lack of knowledge and understanding in EE [9]. Even though decision-makers strongly indicated that the lack of a ceiling threshold was the potential barrier diminishing the use of EE information for policy decision-making in Thailand, it seems very questionable whether respondents really understand the concept of a ceiling threshold given that a majority of them could not interpret the ICER term. It is possible that there may be a bias toward neutral response categories when rating the potential barriers related to the use of EE information in policy decision-making. Thus, interpreting and using these findings needs to be done with caution.

Furthermore, the lack of EE knowledge among researchers may lead to the lack of EE studies in Thailand, especially for urgent policymaking. When looking at the publication experience of all respondents in this study, only 10% of researchers and 4% of decision-makers had ever published EE studies. Similar results also found in Australia indicated that 47% of Australian decision-makers agreed that there was no appropriate EE study available when they had to make policy decisions in a short time period [7]. Teerawattananon's study showed that only 41 EE publications related to the Thai health-care setting on Pubmed databases during 1982 to 2005 were found, and among these publications there was a lack of EE publications of 15 of the top 20 major health problems in Thailand because of the poor distribution of research funding in areas of major health problems [6]. In this study, the respondents also prioritized the top five diseases that needed to be conducted through EE studies (i.e., AIDS, diabetes, homicide, traffic accident, and chronic obstructive pulmonary disease (COPD)/anemia) because those diseases corresponded to the list of disease burden in Thailand. Interestingly enough, both researchers and decision-makers agreed that the first rank of intervention needed to be performed through EE was individual prevention. It is fascinating that both parties realized the importance of EE information with regard to prevention intervention instead of curative intervention by treatment, the most common intervention usually conducted in EE studies. Based on the viewpoint of researchers, the second rank was curative intervention by treatment, whereas decision-makers indicated that it was social/community intervention. Because most decision-makers in this study are responsible for managing health-care resource allocation at the provincial and hospital levels, particularly in rural areas, they might comprehend the significance of social/community interventions to a greater extent than researchers.

In addition, the lack of EE knowledge among researchers may result in the lack of high-quality EE studies, which could limit the application of these EE studies. Decision-makers might hesitate to adopt the EE findings and use them for policy decision-making because they might have concerns regarding not only the quality of EE studies but also the potential industry sponsorship bias of EE studies. This was confirmed by Teerawattananon et al.'s study, which showed that serious attention needed to be given to the quality of reporting and the use of information in the analyses [6].

Therefore, the lack of EE training may be a major explanation for the knowledge gap in EE. Of all 58 respondents working as researchers, only about 50% had never experienced any EE training, whereas approximately 71% of respondents with the role of decision-makers had never been trained in EE. Likewise, most decision-makers in European counties (i.e., Finland, France, Germany, Norway, Portugal, Spain, Sweden, The Netherlands, and the UK) also had very limited knowledge of cost–benefit analysis, cost-effectiveness analysis, or cost–utility analysis, and only one-third had attended health economics training [11,12]. Similar to decision-makers in Australia, 26% of them accepted that they lacked EE knowledge and expertise in all areas as well as EE training, and this represented a significant barrier to the use of EE [7]. It should be noted that the majority of researchers and decision-makers showed their interest in short-course training, on-the-job training, long-distance curriculum, and short-tem research fellowships, respectively. Nevertheless, the responses do not always reflect actual practice. It is difficult to observe whether those who stated that they used EE in decision-making or were willing to take EE training have the chance or will do so in real practice.

At the moment, partly as a consequence of this study, the Health Intervention and Technology Assessment Program (HITAP), a nonprofit organization financially supported by public organizations responsible for appraising health technologies and interventions in Thailand, has annually provided both basic and advanced EE training to strengthen human capacity toward EE for interested researchers and decision-makers from both public and private organizations. This would help researchers and decision-makers improve their EE knowledge to overcome the barrier to producing high-quality EE research as well as to use EE information in policy decision-making. Ultimately, EE training will help build human capacity toward EE and strengthen EE of health care in Thailand in the future.

Conclusions

Even though EE is perceived as essential information for health policy decision-making, researchers and decision-makers still lack EE knowledge and skills. Extensive unmet demand for EE training that HITAP has been responsible to provide for Thai researchers and decision-makers still exists. Findings from this study contribute to the short- and long-term plans for research capacity building and strengthening in EE of health care. Regular monitoring of progress achieved in human, institutional research capacity, and fundamental system related to EE is recommended.

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